

REMARKS

This is a full and timely response to the non-final Official Action mailed February 25, 2008 (the "Office Action" or "Action"). Reconsideration of the application in light of the following remarks is respectfully requested.

Claim Status:

By the forgoing amendment, various typographical errors in the specification have been corrected. *No amendments to the claims are proposed by the present paper.* Thus, claims 1-46 are currently pending for further action.

Prior Art:

Claims 1-46 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,853,486 to Cruz-Uribe et al ("Cruz"). For at least the following reasons, this rejection should be reconsidered and withdrawn.

Claim 1:

Claim 1 recites:

A method of reducing a gray scale discontinuity between pixel locations in a blackened state on a contrast enhancing screen and pixel locations in a gradual shading region of an image displayed by a projector on said contrast enhancing screen, said discontinuity caused by ambient light, said method comprising:

measuring an intensity of said ambient light;

comparing said measured ambient light intensity *to an average intensity of light projected by said projector onto said gradual shading region*; and
generating apparent gray scale levels for pixels to be displayed in said pixel locations in said gradual shading region based on said comparison.

(Emphasis added).

Applicant here notes that claim 1 is a method that calls for measuring an intensity of ambient light and comparing the measured ambient light intensity to an average intensity of light projected by a projector “*onto said gradual shading region.*” (Claim 1). Thus, the comparison is not between the ambient light intensity and the average intensity of *all* projected light, but rather between the ambient light intensity and the average intensity of light projected onto a specific “gradual shading region.” A “gradual shading region” is defined and explained in Applicant’s specification at, for example, paragraph 0048.

In contrast, the recent Office Action appears to have over looked that claim 1 specifically compares ambient light to the average intensity of light projected onto a specific gradual shading region. In this regard, the Office Action argues that Cruz teaches this subject matter at col. 6, lines 40-58. (Action, p. 3). That portion of Cruz states the following.

Photodetector 38 may be responsive to visible light. The control image may be the projected image itself, provided that the projection screen is configured to change the reflectance state of the active layer only when the intensity of the light of the incident control image reaches a pre-determined intensity level. This pre-set intensity level may be above the ambient light level in the wavelengths used, assuring that in the regions of the display surface where only ambient light is incident on the screen, the screen will remain dark, thereby improving the contrast of the image. Optionally, a potentiometer or other adjusting mechanism may be provided to adjust the threshold light level at which the pixel elements change reflectance state, so that the screen can provide good contrast under a range of ambient light conditions. The adjusting mechanism may be manual, or alternatively, an automatic adjusting mechanism may be provided, such as an electronic circuit having a light sensor, for example. (Cruz, col. 6, lines 40-58).

There does not appear to be any mention here of comparing an ambient light intensity with the average intensity of light projected onto a specific “gradual shading region.” It is incumbent upon the Examiner to identify where in the reference each element may be found. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (BPAI 1990). Consequently, when the Examiner fails to identify a claimed element, the Examiner has failed to establish a *prima facie* case of anticipation.

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 1 and its dependent claims should be reconsidered and withdrawn.

Claim 7:

Claim 7 recites:

A method of operating a light engine configured to project light onto a group of pixel locations of a viewing surface during a time period, said method comprising:
estimating an ambient light energy received by said group of pixel locations during said time period;
determining a threshold gray scale level of the light engine; and
dithering pixels having gray scale levels at or below said threshold gray scale level to be displayed in said group of pixel locations if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level.
(Emphasis added).

Applicant notes that the method of claim 7 only recites dithering pixels “if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level.” Moreover, is dithering occurs, claim 7 does not recite dithering *all* pixels, but rather recites “dithering pixels *having gray scale levels at or below said threshold gray scale.*” (Emphasis added).

In this regard, the Office Action cites three different portions of the Cruz reference. (Action, p. 5). Unfortunately, the Action provides absolutely no explanation as to how the cited portions of Cruz are relevant to the subject matter of claim 7. This is a recurring deficiency in the Office Action.

Turning to the portions of Cruz cited in the Action, the first, col. 3, lines 45-60, has nothing to do with dithering. The third, col. 6, lines 40-57, was quoted above and, likewise, does not mention dithering. The second section of Cruz cited, col. 4, lines 10-22, states the following.

The image data for a full color image may be converted by the reflectance processor into an approximately grayscale image by dithering the image using black and white pixels, where the black and white pixels may then be mapped to the high reflectance and low reflectance states of the pixel elements of the display surface. The resulting gray-scale image may then enhance the contrast of the image projected onto the display surface. Alternatively, the desired image may include gray tones created by rapidly switching selected pixel elements between the high reflectance and low reflectance states, so that the pixel elements are perceived by the viewer as an intermediate reflectance state.
(Cruz, col. 4, lines 10-22) (emphasis added).

Thus, Cruz teaches dithering to convert an entire full color image into a grayscale image. Cruz does not appear to teach dithering specific pixels “having gray scale levels at or below said threshold gray scale level to be displayed in said group of pixel locations *if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level,*” as recited in claim 7. (Emphasis added). Again, the Action fails to provide enough analysis to make out a *prima facie* case of anticipation with respect to claim 7. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (BPAI 1990).

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 7 and its dependent claims should be reconsidered and withdrawn.

Claim 12:

Independent claim 12 recites:

A method of operating a light engine configured to generate and display an image on a viewing surface, said image formed by pixels having varying gray scale levels, said method comprising:

generating an estimate of an ambient light intensity level; and
selecting between half-toning and dithering to generate said gray scale levels for each of said pixels in response to said estimated ambient light level.

(Emphasis added).

In this regard, the Office Action cites to Cruz at col. 3, lines 45-60, col. 4, lines 1-35 and col. 6, lines 40-57. (Action, p. 6). Applicant has reviewed these portions of Cruz. However, Cruz does not appear to teach a method that includes “selecting between half-toning and dithering to generating” gray scale levels for individual pixels in response to estimated ambient light level. In fact, the Office Action fails to indicate how or where Cruz even mentions half-toning.

It is incumbent upon the Examiner to identify where in the reference each element may be found. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (BPAI 1990). Consequently, when the Examiner fails to identify a claimed element, the Examiner has failed to establish a prima facie case of anticipation.

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 12 and its dependent claims should be reconsidered and withdrawn.

Claim 17:

Independent claim 17 recites:

A system for reducing a gray scale discontinuity between pixel locations in a blackened state on a contrast enhancing screen and pixel locations in a gradual shading region of an image displayed by a projector on said contrast enhancing screen, said discontinuity caused by ambient light, said system comprising:

an ambient light sensor configured to measure an intensity of said ambient light;

an image processing unit configured to *compare said measured ambient light intensity to an average intensity of light projected by said projector onto said gradual shading region*; and

a spatial light modulator configured to generate apparent gray scale levels for pixels to be displayed in said pixel locations in said gradual shading region based on said comparison.

(Emphasis added).

Claim 17 is similar to claim 1, discussed above, in that claim 17 recites a system that measures an intensity of ambient light and compares the measured ambient light intensity to an average intensity of light projected by a projector “*onto said gradual shading region.*”

(Claim 17). Thus, the processing unit is not making a comparison between the ambient light intensity and the average intensity of all projected light, but rather between the ambient light intensity and the average intensity of light projected onto a specific “gradual shading region.”

As noted above, “gradual shading region” is defined and explained in Applicant’s specification at, for example, paragraph 0048.

As above, the Office Action again cites to col. 6, lines 40-57, among other less relevant sections of Cruz. (Action, p. 8). However, as demonstrated above, this portion of Cruz does not appear to teach or suggest the claimed processing unit comparing an ambient light intensity with the average intensity of light projected onto a specific “gradual shading region.”

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 17 and its dependent claims should be reconsidered and withdrawn.

Claim 23:

Claim 23 recites:

A light engine for displaying an image having a gradual shading region on a contrast enhancing screen, said light engine comprising:

a spatial light modulator configured to generate gray scale levels for pixels in said image;

projector optics configured to project light comprising said image onto said contrast enhancing screen, said projected light having an intensity; and

an ambient light sensor configured to measure an intensity of ambient light reflecting off pixel locations in said contrast enhancing screen corresponding to said gradual shading region;

wherein said spatial light modulator reduces a gray scale discontinuity caused by said ambient light between pixel locations in a blackened state on said contrast enhancing screen and said pixel locations in said gradual shading region by *generating apparent gray scale levels for said pixels to be displayed in said pixel locations in said gradual shading region based on a comparison between said measured ambient light intensity and said projected light intensity.*

(Emphasis added).

Similar to the discussion above, the Office Action has failed to actually indicate how or where Cruz teaches the claimed “ambient light sensor configured to measure intensity of ambient light reflecting off pixel locations” of a screen specifically corresponding to a “gradual shading region.” (Action, p. 9). For at least this reason, the Action fails to make out a *prima facie* case of unpatentability as to claim 23.

Additionally, Applicant notes that “the term ‘apparent gray scale level’ will be used to refer to an average intensity of all the pixels within a pixel block (e.g.; 150-153). The average intensity of the pixels may be calculated across a number of frames, depending on the dithering algorithm.” (Applicant’s specification, paragraph 0062). In this regard, as in the treatment of previous claims, the Action indiscriminately cites half-a-dozen portions of Cruz *without explaining the relevance of any of them*. (Action, p. 10). Consequently, the Action fails to demonstrate how or where Cruz teaches “generating apparent gray scale levels for said pixels to be displayed in said pixel locations in said gradual shading region based on a comparison between said measured ambient light intensity and said projected light intensity.

It is incumbent upon the Examiner to identify where in the reference each element may be found. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (BPAI 1990). Consequently, when the Examiner fails to identify a claimed element, the Examiner has failed to establish a *prima facie* case of anticipation.

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 23 and its dependent claims should be reconsidered and withdrawn.

Claim 28:

Claim 28 recites:

A projector system for displaying an image on a viewing surface, said system comprising:

a light engine configured to generate pixels having gray scale levels to be displayed in corresponding pixel locations on said viewing surface; and
an ambient light sensor configured to measure an intensity of ambient light reflecting off said pixel locations on said viewing surface;
wherein said light engine is further configured to receive said measured ambient light intensity from said ambient light sensor and *select between a half-toning algorithm and a dithering algorithm to generate said gray scale levels for each of said pixels based on said measured ambient light intensity.*
(Emphasis added).

Similar to the rejection of claim 12, treated above, the Office Action cites to Cruz at col. 3, lines 45-60, col. 4, lines 1-35, col. 5, lines 20-40 and col. 6, lines 40-57 in rejected in claim 28. (Action, p. 11). Again, Applicant has reviewed these portions of Cruz. However, Cruz, as cited, does not appear to teach a system that includes a light engine configured to “select between a half-toning algorithm and a dithering algorithm to generate” gray scale levels for individual pixels in response to a measured ambient light level. In fact, the Office Action fails to indicate how or where Cruz even mentions half-toning.

Again, the Action fails to make out a *prima facie* case of anticipation against claim 28. “A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 28 and its dependent claims should be reconsidered and withdrawn.

Claim 36:

Claim 36 recites:

A system for reducing a gray scale discontinuity between pixel locations in a blackened state on a contrast enhancing screen and pixel locations in a gradual

shading region of an image displayed by a projector on said contrast enhancing screen, said discontinuity caused by ambient light, said system comprising:
means for measuring an intensity of said ambient light;
means for comparing said measured ambient light intensity to an average intensity of light projected by said projector onto said gradual shading region; and
means for generating apparent gray scale levels for pixels to be displayed in said pixel locations in said gradual shading region based on said comparison.

In contrast, as discussed above, the Action has failed to demonstrate how or where Cruz teaches means for comparing measured ambient light intensity to an average intensity of light projected by said projector onto a specific “gradual shading region,” as recited by claim 36. The Action has further failed to demonstrated how or where Cruz teaches means for “generating apparent gray scale levels for pixels to be displayed in said pixel locations in said gradual shading region *based on said comparison*.” The Action does not even address the concept of an apparent gray scale level as defined in Applicant’s specification, let alone the recited comparison.

Again, It is incumbent upon the Examiner to identify where in the reference each element may be found. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (BPAI 1990). Consequently, when the Examiner fails to identify a claimed element, the Examiner has failed to establish a prima facie case of anticipation. Moreover, “[a] claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 36 and its dependent claims should be reconsidered and withdrawn.

Claim 40:

Claim 40 recites:

A system for operating a light engine configured to project light onto a group of pixel locations of a viewing surface during a time period, said system comprising:
means for estimating an ambient light energy received by said group of pixel locations during said time period;
means for determining a threshold gray scale level of said light engine; and
means for dithering pixels having gray scale levels at or below said threshold gray scale level to be displayed in said group of pixel locations if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level.

As with claim 7, discussed above, Applicant notes that the system of claim 40 only includes means for “dithering pixels ... if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level.” Moreover, claim 40 does not recite means for dithering *all* pixels indiscriminately, but rather recites “means for dithering pixels *having gray scale levels at or below said threshold gray scale.*” (Emphasis added).

As with claim 7 above, the Office Action cites several different portions of the Cruz reference. (Action, p. 15). However, the Action does not contain *any* explanation of the relevance of any of the cited portions of Cruz.

Applicant has reviewed the cited portions and finds that only the same one cited above in regard to claim 7 even mentions dithering.

The image data for a full color image may be converted by the reflectance processor into an approximately grayscale image by dithering the image using black and white pixels, where the black and white pixels may then be mapped to the high reflectance and low reflectance states of the pixel elements of the display surface. The resulting gray-scale image may then enhance the contrast of the image projected onto the display surface. Alternatively, the desired image may include gray tones created by rapidly switching selected pixel elements between the high reflectance and low reflectance states, so that the pixel elements are perceived by the viewer as an intermediate reflectance state.
(Cruz, col. 4, lines 10-22) (emphasis added).

Thus, as noted above, Cruz teaches dithering to convert an entire full color image into a grayscale image. Cruz does not appear to teach means for dithering specific pixels “having gray scale levels at or below said threshold gray scale level to be displayed in said group of pixel locations *if said estimated ambient light energy is greater than or substantially equal to said threshold gray scale level*,” as recited in claim 40. (Emphasis added).

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 40 and its dependent claims should be reconsidered and withdrawn.

Claim 42:

Claim 42 recites:

A system for operating a light engine configured to generate and display an image on a viewing surface, said image formed by pixels having varying gray scale levels, said system comprising:

means for generating an estimate of an ambient light intensity level; and

means for selecting between a half-toning means and a dithering means to generate said gray scale levels for each of said pixels in response to said estimated ambient light level.

(Emphasis added).

In this regard, the Office Action cites to Cruz at col. 3, lines 45-55, col. 4, lines 1-35, col. 5, lines 20-40, col. 6, lines 40-57 and col. 12, lines 39-51. (Action, p. 16). As before, the Action unhelpfully provides absolutely no explanation as to the relevance of any of these cited portions of Cruz. Nevertheless, Applicant has reviewed these portions of Cruz, but finds that Cruz, as cited, does not appear to teach a system that includes “means for selecting

between a half-toning means and a dithering means to generate” gray scale levels for individual pixels in response to estimated ambient light level. In fact, the Office Action fails to indicate how or where Cruz even mentions half-toning.

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. Therefore, for at least the reasons explained here, the rejection based on Cruz of claim 42 and its dependent claims should be reconsidered and withdrawn.

Dependent claims:

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. However, it is not thought necessary to cite specific examples as the Office Action has failed to make out a *prima facie* case of anticipation with respect to any of the independent claims.

35 U.S.C. § 103:

Applicant wishes to here note that Cruz would not be valid prior art against the present application under 35 U.S.C. § 103(a) because of the provisions of 35 U.S.C. § 103(c). Specifically, Applicant hereby states that the subject matter of the present application and the Cruz reference were, at the time the invention of the present application was made, owned by, or subject to an obligation of assignment to, the same person, i.e., Hewlett-Packard Development Co. LP (See MPEP § 706.02(1)(2)). Therefore, no rejection of any claim of the present application should be made under 35 U.S.C. § 103 in reliance on the Cruz reference.

Conclusion:

In view of the foregoing arguments, all claims are believed to be in condition for allowance over the prior art of record. Therefore, this response is believed to be a complete response to the Office Action. However, Applicant reserves the right to set forth further arguments in future papers supporting the patentability of any of the claims, including the separate patentability of the dependent claims not explicitly addressed herein. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

The absence of a reply to a specific rejection, issue or comment in the Office Action does not signify agreement with or concession of that rejection, issue or comment. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

If the Examiner has any comments or suggestions which could place this application in better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Steven L. Nichols', written over a horizontal line.

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